

## **Response to Comments**

### **Concerning the Intent to Issue the General Permit to Limit Incompatibility Excess Emissions and Provide an Exemption from Stage II Vapor Recovery Requirements**

On November 7, 2012, the Commissioner of the Department of Energy and Environmental Protection (Department) published notice of a tentative determination to issue the General Permit to Limit Incompatibility Excess Emissions and Provide an Exemption from Stage II Vapor Recovery Requirements. As announced in the public notice, a public hearing was held on the determination on January 9, 2013. The public comment period on the determination remained open until January 18, 2013, after a request was received and granted to extend the comment period from the original deadline of January 9, 2013.

This document describes the general permit, identifies the persons submitting comment, and summarizes and responds to all written comments on the tentative determination.

#### **Summary of the General Permit**

The general permit authorizes a person to decommission Stage II vapor recovery systems at a gasoline dispensing facility (GDF) in Connecticut and grants an exemption from the following requirements of section 22a-174-30 of the Regulations of Connecticut State Agencies (RCSA): subsections (b); (c)(1) through (5); (d); (e); and (g). Stage II vapor recovery systems are installed at gasoline pumps in Connecticut to collect the gasoline vapors released when gasoline is pumped and direct those vapors back to the gasoline storage tank. The general permit specifies the elements required in the Stage II vapor recovery system decommissioning process; maintenance requirements for Stage I vapor recovery equipment; annual testing requirements for Stage I vapor recovery equipment; and recordkeeping and reporting requirements.

The Department intends to issue this general permit because the emission reductions from onboard refueling vapor recovery (ORVR) systems are essentially equal to and will soon surpass the emissions reduction achieved by Stage II vapor recovery systems alone. ORVR systems are installed on passenger vehicles to serve the same function that Stage II vapor recovery systems serve, to control emissions released when a passenger vehicle is fueled. Starting in 2015, continued compliance with the Stage II vapor recovery requirements of RCSA section 22a-174-30 will cause increases in volatile organic compound and toxic air pollutant emissions, thereby negatively impacting public health, and impose unnecessary maintenance costs on owners of gasoline dispensing facilities.

#### **Persons Providing Comments**

The following persons provided timely written comment on the Department's tentative determination to issue the general permit:

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### Comments and Responses

Comments are summarized in this section with responses from the Department including any revision made to the general permit as a result of comment. The origin of any comment is provided by the number in brackets located at the end of the comment. The number corresponds to the person identified by that number in the previous section of this document. The full text of each comment is available on the Department's website at the following location:

[http://www.ct.gov/dep/cwp/view.asp?a=2684&q=322138&depNav\\_GID=1619](http://www.ct.gov/dep/cwp/view.asp?a=2684&q=322138&depNav_GID=1619)

**Comment 1:** For consistency with the decommissioning procedures referenced later in the document, EPA Region 1 suggests that the definition of “decommission” be revised to read as follows:

“...Decommissioning requires a permanent disconnection of Stage II vapor recovery equipment and sealing of all vapor/liquid paths that may release to the ambient air, although below-ground Stage II vapor recovery piping may be left in place, **so long as it remains under a vapor-tight seal.**” [1]

**Response to Comment 1:** The Department should revise the definition of “decommission” by the addition of the phrase recommended by EPA Region 1.

**Comment 2:** The general permit and Connecticut’s February 2012 compliance waiver for newly constructed gasoline dispensing facilities provide exemptions from the Stage II vapor recovery system requirements of Connecticut’s section 22a-174-30, which has been approved into the Connecticut State Implementation Plan (SIP). Therefore, Connecticut should revise its SIP accordingly. Furthermore, in order for EPA to be able to approve these exemptions, Connecticut must demonstrate that it meets the anti-backsliding requirements of Clean Air Act (CAA) Section 110(l) as well as the CAA’s requirements for states in the Ozone Transport Region to implement Stage II or “comparable measures.” Connecticut’s SIP revision should include a demonstration to satisfy the necessary CAA requirements in accordance with the US Environmental Protection Agency’s (EPA’s) “Guidance on Removing Stage II Gasoline Vapor Control Programs from State Implementation Plans and Assessing Comparable Measures,” issued August 7, 2012. [1]

**Response to Comment 2:** The Department thanks EPA for the reminder concerning Connecticut’s SIP obligations. The Department is aware of the requirements of CAA sections 110(l) and 184(b)(2) and is familiar with the referenced guidance. After issuing the general permit, the Department will take the necessary next steps concerning the Stage II vapor recovery program for gasoline dispensing stations and will address its SIP obligations.

**Comment 3:** Prior to performing any pressure decay test on any gasoline underground storage tank system after decommissioning, there are two tests that should always be performed:

- A test of all Pressure/Vacuum (P/V) Vent Valves should be conducted in accordance with California Air Resources Board (CARB) TP 201.1E (10/8/2003). This ensures that the P/V valve or valves are all functioning properly. Just because a pressure decay test passes the test does not mean that the P/V valve or valves are working properly. If the valve is stuck in the closed position, the tanks may operate under excessive vacuum or over pressurize, which could cause damage to the tank system or release excessive gasoline vapors to the atmosphere. Testing the P/V valves every time a pressure decay test is performed ensures the gasoline tank system is maintaining the appropriate amount of pressure or vacuum in the tank system and the P/V valves will open should excessive pressure or vacuum levels be reached for whatever reason. Also, if P/V valves are not functioning properly, it could throw tank inventory level readings off and cause the owner to perform unnecessary testing and calibrations to investigate inventory discrepancies due to tanks not venting properly.
- A Vapor-Space Tie-In Test in accordance with CARB TP 201.3C (3/17/1999) Test Option 2 (Section 6.3, page 5 of the test procedure document). This test ensures that the tester is performing the pressure decay test on all of the gasoline tank systems. Once stage II systems are decommissioned, it is possible and in some cases it is probable that some of these “manifolded systems” will no longer be manifolded in the vapor space and a separate pressure decay test will need to be performed on each individual gasoline UST system (Regular, Plus, Super) to ensure each tank system is vapor tight. If the Vapor-Space Tie-In test is not performed, a tester could assume that he (or she) tested all gasoline tanks when in fact they only tested one of the tanks and not the others. Stage II systems are manifolded because all gasoline tanks share one common vapor line that ties all gasoline tanks together underground 99% (if not higher) of the time. Once

stage II systems are decommissioned or disconnected from the USTs, it is very possible that some of these systems will no longer be manifolded depending on what was done during decommissioning. It is critical for the tester to verify that all gasoline tanks are being tested for vapor tightness, which is accomplished by performing the Vapor-Space Tie-In test. [2]

**Response to Comment 3:** The Department agrees with the commenter's recommendation. For the reasons stated by the commenter, the Department should require a registrant to conduct a pressure/vacuum vent valve test and a vapor-space tie-in test along with a pressure decay test to determine that a decommissioning has been conducted properly.

The Department should revise the general permit to add definitions of "CARB," "pressure/vacuum vent valve test" and "vapor-space tie-in test" to Section 2 of the general permit; add the two tests to Section 5(a)(2)(A) and (3); add the requirement to test and to repeat tests to Section 5(b) and include the two tests in the reporting provisions of Section 5(d).

**Comment 4:** Sunoco owners or operates 19 stations in Connecticut, and there are an additional 145 stations that are branded Sunoco but are owned and operator by distributors or dealers. Sunoco supports the issuance of the general permit. The removal of Stage II vapor recovery systems will be a win-win situation as it will potentially reduce the amount of vapors to the atmosphere because new vehicles collect the displaced vapors. Decommissioning will also reduce operational costs for station operators. [4]

**Response to Comment 4:** The Department notes Sunoco's support for the issuance of the general permit. No revision to the general permit is necessary in response to this comment.

**Comment 5:** The Connecticut Petroleum Council supports the issuance of the general permit. The Council's support for the general permit is based on an analysis of a consultant, Todd Tamura. Mr. Tamura's comments (included as Attachment 1) refute the criticisms made by Ted Tiberi (commenter #3) concerning the removal of Stage II vapor control equipment. Mr. Tamura concludes that there are no fundamental flaws or omissions in the Department's analyses and that Tiberi overestimates the short-term breathing loss emissions. [5]

**Response to Comment 5:** The Department notes the Connecticut Petroleum Council's support for the issuance of the general permit. The Department agrees with the analysis and conclusion of Mr. Tamura and responds to Tiberi's comments later in this document. The Department should not revise the general permit in response to this comment.

**Comment 6:** Is the intent of the General Permit to require that all Stage II Vapor Recovery Systems be decommissioned by July 1, 2015? Will the continued operation of these systems after that date be prohibited? Please clarify. [6]

**Response to Comment 6:** The general permit is a voluntary compliance option for the owners of gasoline dispensing facilities choosing to decommission Stage II vapor recovery equipment. The general permit does not mandate decommissioning and does not prohibit the continued operation of installed Stage II vapor recovery systems. The Department views the general permit as an interim measure that allows for decommissioning to occur as soon as possible. During the term of the general permit, the Department expects to develop and seek approval for regulatory and statutory language to address decommissioning of Stage II vapor recovery equipment.

The Department should not revise the general permit in response to this comment.

**Comment 7.** I am pleased to submit the attached report in response to the Department providing an exemption from Stage II vapor recovery requirements. The attached report which used State of MA throughput and Stage II penetration figures shows that elimination of Stage II with sole reliance on

ORVR systems increases emissions of VOCs and HAPs. In addition, a disproportionate share of the cancer-causing emissions burden will be borne by so-called EJ (Environmental Justice) Communities; where older populations of non-ORVR vehicles predominate the vehicle population. [3]

**Response to Comment 7:** In response to the general permit, the commenter provides a criticism of a report prepared by a consultant concerning Stage I and II programs in Massachusetts. While the considerations are similar to those of the Department's analysis prior to issuing the permit, the criticism concerns the approach that Massachusetts is using to determine the future of its Stage I and II programs and is not within the scope of this proceeding, which concerns the issuance of a general permit in Connecticut. The Department should not revise the general permit in response to this comment.

**Comment 8:** We feel the optimal solution to minimizing refueling emissions and incompatibility excess emissions involves the use of Stage II, ORVR and an active vapor processor located on the combined ullage space of the GDF storage tanks. For some reason, the dkC (Klausmeier) study did not consider the option for CT GDF to incorporate Stage II, ORVR and active vapor processors. The consultant's study did recommend the use of vapor processors to minimize IEE from GDF storage tanks after removal of Stage II systems. The logic is strange; don't enhance what you already have and thereby leverage existing hardware (Stage II systems); but rather give up emissions when non- ORVR vehicles are refueled at non- Stage II GDF (where the motorist is directly exposed to carcinogenic vapors), and then limit the IEE from the storage tanks with a vapor processor. [3]

**Response to Comment 8:** The commenter does not comment upon the requirements of the general permit but disputes the decision by the Department to pursue decommissioning, a concern outside the scope of the decision to issue the general permit and not timely. That said, we choose to respond to correct misunderstandings by the commenter.

We understand the commenter, a manufacturer of a vapor processor that is designed to enhance the reduction of overall gasoline vapor emissions at a GDF, favors any state gasoline vapor control program that mandates the use of a vapor processor. Connecticut has considered such an option and has discarded it in favor of an alternative that provides greater benefit to the public. Prior to EPA's release of the widespread use determination in May 2012, the Department hired a consultant, Rob Klausmeier of de la Torre Klausmeier Consulting Inc. to evaluate its gasoline vapor control program. Two tasks, among others, required of Mr. Klausmeier were: (1) estimating the cost and benefits of terminating or enhancing the Stage II vapor recovery program; and (2) estimating the cost and benefits of enhancing the Stage I vapor recovery program to achieve additional VOC reductions. The two tasks were completed to the satisfaction of the Department, and the final report evaluates the emissions and financial considerations of both terminating and enhancing Stage II vapor recovery and enhancing Stage I vapor recovery systems. The report discusses enhancements to Stage II equipment as an option on pages 12-13 of the report prepared by Mr. Klausmeier. The option called CA EVR Module 2 includes active processors that manage storage tank pressure.

The information and analyses in the Klausmeier report support the Department's decision to decommission the Stage II program in Connecticut. The Department plans to undergo additional evaluation of possible enhancements for its Stage I vapor recovery program. The consultant's report is available on the Department's website at the following location:  
[http://www.ct.gov/dep/lib/dep/air/stageii/final-report\\_future\\_options\\_gdf\\_vapor-control-program\\_\(dkc-finalreport\).pdf](http://www.ct.gov/dep/lib/dep/air/stageii/final-report_future_options_gdf_vapor-control-program_(dkc-finalreport).pdf)

In response to the commenter, we also note that at this time a gasoline station owner is free to retain existing Stage II equipment and install an active vapor processor as the commenter

recommends. Such a choice is consistent with existing regulatory requirements, if the processor is CARB approved.

**Comment 9:** The commenter, a manufacturer of a vapor processor designed to enhance the reduction of overall gasoline vapor emissions at a GDF, submitted a paper entitled *Stage II & ORVR and Associated Emissions of Gasoline Vapor State of Connecticut Gasoline Dispensing Facilities*. The paper disagrees with the decision by the Department to allow for decommissioning of Stage II vapor controls as the commenter asserts that this does not provide optimal emissions reductions, considering both refueling and storage tank emissions. The commenter suggests an alternative method of quantifying the incompatibility excess emissions and storage tank breathing losses; suggests that the Department overlooks the adverse health impacts from raw, uncontrolled emissions from non-ORVR vehicles; and suggests that the Department overlooked the positive impact of using active processors to enhance Stage II vapor recovery. [3]

**Response to Comment 9:** The commenter may be correct in the assertion that more could be done to create emissions reductions than those achieved by the use of ORVR without Stage II controls. However, the Department's judgment based on substantial information is that any incremental emissions reductions that might be achieved would come at a great cost. The Department made that decision prior to making the tentative determination to issue this permit. The commenter was invited to participate in that decision making process, and he attended a meeting, submitted written comments and spoke to staff. The information he provided was considered. As this proceeding concerns the tentative determination to issue the general permit, the commenter's assertions are outside the scope of this proceeding and are not timely.

In the interest of noting the decisions that resulted in the tentative determination to issue the general permit, we choose to respond to the commenter's suggestion that the Department overlooked important considerations in its decision making.

The commenter takes the view that the "widespread use" approach used by EPA and the Department is flawed, and the Department should instead ignore EPA and its consultant's determinations and take a more holistic and integrated view of GDF emissions to achieve an incremental gain in emissions reductions. The commenter begins his argument with alternative method of quantifying emissions from GDFs. The Department disagrees with the assumptions made by the commenter in his alternative method. With regard to the overlooked health impacts, the Department refers to Mr. Tamura's analysis, discussed in the response to comment 5. That the Department overlooked the use of processors is fundamentally untrue; pages 12-13 of the Klausmeier report, discussed in the response to comment 8, considers the option of use of a processor.

Finally, the Department disagrees with the commenter's assertion that Stage I and Stage II vapor recovery systems are best considered together. While both systems are in use at GDFs, they are independent systems that address independent sources of emissions. The Department has historically regulated the two control systems separately. While we now act to decommission Stage II systems, the Department is evaluating the potential for cost effective emissions reductions through enhanced Stage I vapor control requirements.

The Department should not revise the general permit in response to this comment.

**Comment 10.** CEMA supports the Department's proposal to adopt the General Permit to limit incompatibility excess emissions caused by equipment incompatibility and provide an exemption from Stage II vapor recovery requirements for the following reasons:

1. Connecticut must approve the General Permit because it is consistent with the May 2012, EPA determination that widespread use of Onboard Refueling Vapor Recovery (ORVR) has been achieved as is required by the Federal Clean Air Act.  
<http://www.epa.gov/glo/pdfs/20120509fs.pdf>
2. In February 2012, the Department sought and ultimately received approval from EPA to grant Stage II vapor recovery compliance waivers in Connecticut for newly constructed gasoline dispensing facilities because the Stage II vapor recovery technology was “rapidly becoming obsolete.”  
[http://www.ct.gov/dep/lib/dep/air/compliance\\_monitoring/temp\\_authorization/stage\\_ii\\_vapor\\_recovery-compliance\\_waiver.pdf](http://www.ct.gov/dep/lib/dep/air/compliance_monitoring/temp_authorization/stage_ii_vapor_recovery-compliance_waiver.pdf);
3. The Department’s independent consultant concluded in June of 2012 that Connecticut would meet widespread ORVR use by the summer of 2012. [http://www.ct.gov/dep/lib/dep/air/stageii/final-report\\_future\\_options\\_gdf\\_vapor-control-program\\_\(dkc-finalreport\).pdf](http://www.ct.gov/dep/lib/dep/air/stageii/final-report_future_options_gdf_vapor-control-program_(dkc-finalreport).pdf);
4. Commissioner Daniel Esty, issued a press statement in February 2012 informing the public that Connecticut was taking steps to phase out Stage II vapor recovery systems to make “Connecticut a less costly place to do business and a better place to live”.  
<http://www.ct.gov/deep/cwp/view.asp?Q=498810&A=4174>;
5. President Obama’s Administration issued a report on May 24, 2011 stating that, “Onboard refueling vapor recovery technology on today’s gasoline-powered vehicles effectively controls harmful air emissions as cars and trucks refuel, thereby eliminating the need for controls at the gas pump.” <http://www.whitehouse.gov/the-press-office/2012/05/10/executive-order-identifying-and-reducing-regulatory-burdens>;
6. The Obama Administration report indicates the phase-out of redundant Stage II vapor recovery will save the industry approximately \$67 million per year which is money that can be invested to create jobs for our ailing economy.
7. The general permit needs to be approved because of the unnecessary financial burden that it places on the owners of the approximately 1,400 gasoline dispensing facilities located in Connecticut. Those costs can range between \$40,000 and \$70,000 per gasoline dispensing facility, with approximately \$5,000 in annual maintenance costs per year.
8. Last year there were nearly 15 million new ORVR equipped gasoline powered vehicles placed into service. This equates to approximately 40,000 new ORVR vehicles placed in use each and every day. Therefore, the percentage ORVR vehicles in-use has increased since EPA made its decision to eliminate Stage II VR and will continue to increase each and every day as new vehicles are purchased and placed into service and older, non-ORVR vehicles are removed from the state fleet;
9. Stage II incompatibility between ORVR and vacuum assist Stage II systems results in excess vapor being emitted through the tank vent pipe. With 94% of the gasoline dispensing facilities in Connecticut using vacuum assist equipment and now that widespread use has been achieved, it is imperative to approve the general permit;
10. State law under CGS Section 22a-183 and CGS Section 22a-174(k) authorizes the Department to approve the general permit.

CEMA asks that the Department adopt the general permit to limit excess emissions caused by equipment incompatibility and provide an exemption from Stage II vapor recovery requirements to the benefit of our environment and the businesses that pay taxes and contribute to the local economy. [7]

**Response to Comment 10:** The Department notes CEMA's support for the general permit. The Department should not revise the general permit in response to this comment.



**Attachment 1**  
**Tamura Environmental's Analysis of Ted Tiberi's Comments**

TO: Shane Skelton, American Petroleum Institute  
 FROM: Todd Tamura, QEP  
 RE: Review of Tiberi et al. paper, "Stage II & ORVR and Associated Emissions of Gasoline Vapor- State of Connecticut Gasoline Dispensing Facilities"  
 DATE: January 8, 2013

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The principle conclusions of the paper "Stage II & ORVR and Associated Emissions of Gasoline Vapor-State of Connecticut Gasoline Dispensing Facilities" by Tiberi et al. are that "past studies and analyses" regarding Stage II removal have overlooked three things:

1. The "proper" quantification and accounting for the Incompatibility Excess Emissions (IEE) and the Storage Tank Breathing Losses (STBL) from the USTs
2. The adverse health impacts from raw, uncontrolled emissions from non-ORVR vehicles; especially the disproportionate share of this burden being borne by EJ Communities
3. The positive impact of using active processors to enhance Stage II by managing storage tank pressure and significantly reducing IEE and STBL

and that therefore the "optimal course of action is for CT DEEP to require Enhanced Stage II via vapor processors with continuous pressure monitoring and remote data acquisition" (p. 16). These conclusions are not accurate, as identified in more detail below.

"Proper" Quantification and Accounting of IEE and STBL Emissions: The paper by Tiberi et al. makes several assertions regarding emissions quantification without any citation or justification. Each of the charts that incorporates IEE shows the same 0.86 lb/1000 gal factor that was derived by CARB staff with the exception of Chart 5c, which identifies IEE of 3.671 lb/1000 gal without any discussion in the text regarding how this value was arrived at or why it was chosen. The analyses in the paper are based on the assumption that controlled STBL emissions are between 1.0 and 2.5 lb/1000 gal (substantially higher than any of the published data I have seen, which are cited in Connecticut Petroleum Council's previous comments to CT DEEP),<sup>1</sup> and Tiberi et al. also state that "in practice ARID has measured values.[of] about 5 lbs. of VOC per 1,000 gallons of fuel dispensed" (p. 10). Again there are no citations or justification for any of those factors. Although there is a test report available from ARID's website that identifies emissions of 3.48 lb/1000 gal without a PV valve and 1.20 lb/1000 gal with a PV valve,<sup>2</sup> those data were from a facility operating with a vacuum-assisted Stage II system, and are therefore not representative of emissions at a facility without Stage II. In contrast, testing conducted by Tiberi and his contractor at a 12-dispenser GDF without Stage

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<sup>1</sup> S. Guveyan, written comments submitted to Mr. Ric Pirollo and Mr. Robert Girard, Feb. 2, 2012 (available from [http://www.ct.gov/dep/lib/dep/air/stageii/Connecticut\\_Petroleum\\_Comments\\_on\\_Klausmeier\\_Report\\_February\\_2\\_.012.pdf](http://www.ct.gov/dep/lib/dep/air/stageii/Connecticut_Petroleum_Comments_on_Klausmeier_Report_February_2_.012.pdf)).

<sup>2</sup> Matus Technical Services, "Test Report for the ARID Technologies Vapor Recovery Unit installed in Lantana, FL", Project No. 148, available from [http://www.aridtech.com/study\\_Jantana.html](http://www.aridtech.com/study_Jantana.html).

II showed emissions (downstream of a PV vent valve) of just 0.09 lb over a 24-hour period.<sup>3</sup> (Although throughput information were not recorded, a 12-dispenser GDF is likely to have 24-hour throughput in the neighborhood of 8,000 gal/day= 240,000 gal/month or more, in which case 0.09 lb would correspond to no more than 0.011 lb/1000 gal.)

In contrast, CT DEEP's consultant (dKC) used a much lower emission factor-1.0 lb/1000 gal for uncontrolled STBL emissions (prior to control by the PV valve)-that was based on a 1962 study, and calculated impacts of the PV valve.<sup>4</sup> As identified in the Connecticut Petroleum Council's previous comments to CT DEEP,<sup>1</sup> this methodology substantially overestimated emissions for current-day facilities. Those comments provided a detailed explanation of why this was so (with specific references) and were also backed up by experimental data obtained from USTs at two non-Stage II gasoline distribution facilities (GDFs) located in Texas and Rensselaer, NY.

With regard to accounting, Tiberi et al. make the statement that

"...when Stage II and ORVR are used together at a GDF, the storage tank emissions are called IEE (Incompatibility Excess Emissions). When Stage II is not present at the GDF, and only ORVR is employed, the storage tank emissions are called Storage Tank Breathing Losses (STBL)." (p. 4)

Tiberi et al. then indicate that when IEE are included in the evaluations of Stage II, STBL should be included for the case in which Stage II is removed. Specifically, they state that because they are not included in EPA's and dKC's Stage II analysis charts, they have been "set to zero" (even though dKC specifically quantifies them elsewhere in their report), "totally neglected", and "ignored" (p. 7), and that this constitutes a "fundamental flaw" (p. 10). It is actually Tiberi et al. who have erred here: IEE does not include all of the storage tank emissions, it includes only those emissions above those which occur in the absence of ORVR technology; i.e., baseline emissions from the UST (in the absence of ORVR) have been subtracted from the IEE.<sup>5</sup>

Therefore, EPA's and dKC's charts are consistent in excluding normal storage tank emissions from their analyses (i.e., they are excluded from both the data for Stage II+ IEE and the data for ORVR only). Tiberi et al. also indicate (on pp. 2-3 of their paper) that UST emissions may be greater without Stage II than with it (since the former ingest air when running at vacuum, and the latter return a mixture of air and vapor, at least when they fuel non-ORVR vehicles), but as identified previously in this memo, the data that they have collected at facilities with and without

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<sup>3</sup> Matus Technical Services, "Test Report for the ARID Technologies Vapor Recovery Unit installed at the Sunshine Gasoline Station, Miami, FL", Project No. 159, February 13, 2006, received by Florida DEP's Bureau of Air Monitoring and Mobile Sources on August 31, 2006.

<sup>4</sup> R. Klausmeier, "Final Report: Analysis of Future Options for Connecticut's Gasoline Dispensing Facility Vapor Control Program," prepared for Connecticut Department of Energy and Environmental Protection (Hartford, CT) by de la Torre Klausmeier Consulting, Inc. (Austin, TX), June 4, 2012, available from [http://www.ct.gov/dep/lib/dep/air/stageii/final-report\\_future\\_options\\_gdf\\_vapor-control-program\\_%28dkc-finalreport%29.pdf](http://www.ct.gov/dep/lib/dep/air/stageii/final-report_future_options_gdf_vapor-control-program_%28dkc-finalreport%29.pdf).

<sup>5</sup> This is specifically shown in CARB, "EVR Emission Reduction Calculations-Module 3: ORVR Compatibility", in Appendix D of "Hearing Notice and Staff Report, Enhanced Vapor Recovery, Initial Statement of Reasons for Proposed Amendments to the Vapor Recovery Certification and Test Procedures for Gasoline Loading and Motor Vehicle Gasoline Refueling at Service Stations," February 4, 2000, available from <http://www.arb.ca.gov/regact/march2000evr/march2000evr.htm>.

Stage II show the opposite, probably as a result of (a) the fact that at facilities without Stage II, air is ingested at the PV valve vent (much higher above the liquid surface than vapors returned from Stage II equipment) and stays above the heavier hydrocarbon vapors rather than mixing downward, and/or (b) the fact that at facilities without Stage II, operating at vacuum all day means that the UST pressure can increase substantially in the evening (e.g., 10 inches of water column) without opening and venting through the PV valve, whereas at facilities with Stage II, operating under positive pressure or near zero during the day means that the UST can only increase a few inches of water column before opening and venting through the PV valve.

"Adverse health impacts from raw, uncontrolled emissions from non-ORVR vehicles": The paper by Tiberi et al. makes no quantitative assessment of health impacts; it largely mentions qualitative information which has been identified previously. For people refueling non-ORVR vehicles, very short-term exposures (during the few minutes that refueling occurs) could be higher during vehicle refueling without Stage II than with Stage II. However, cancer risk assessments are based on long-term exposures, meaning that whatever exposure exists for a few minutes per day (and probably only a few days per month at most) is not likely to have a significant impact on a quantitative cancer risk assessment. It should also be noted that whatever short-term exposures might be encountered for non-ORVR vehicles are the same as those experienced around most of the country in areas that do not have Stage II vapor recovery, and will be substantially lower than what they were prior to Connecticut's implementation of the Stage II vapor recovery program (i.e., in the 1980s and earlier) as a result of more recent restrictions on gasoline volatility and gasoline benzene content.

"Positive impact of using active processors to enhance Stage II by managing storage tank pressure": dKC specifically mentioned Stage II enhancements on pp. 12-13 of their report, and the reference to "CA EVR Module 2" would include processors that manage storage tank pressure such as ARID's Permeator technology. Tiberi et al.'s overestimation of STBL emissions (discussed earlier in this memo) not surprisingly causes the positive impacts of their active processor technology (both emissions reductions and associated cost savings) to be substantially overestimated as well.

In summary, I believe that (a) there are no fundamental flaws or omissions in the analyses as claimed by Tiberi et al. and that (b) Tiberi et al. have substantially overestimated STBL emissions without providing any supporting evidence.